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Law Beyond the Human in the Arctic and Outer Space*

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As temperatures continue rise in the Arctic, the permafrost begins to thaw, releasing methane (CH4) and other greenhouse gases (GHGs) into the atmosphere. These emissions accelerate future warming.[1] In July 2020, an explosion in the Yamal Peninsula above the Arctic Circle, caused by subterranean gases, has opened up a massive hole. Russian scientists found the 50-meter crater on an expedition.[2] They named it Crater 17, as 16 similar objects have been discovered in Siberia's extreme northwest since the phenomenon was

The Yamal Crater, as seen above, would be miniscule compared to a Yakutia Crater reported by Russian Scientists. Image source: The Siberian Times via Vasily Bogoyavlensky

* The commentary is a shorter version and promotion of Dr. Cirkovic's paper forthcoming in 2021: Elena Cirkovic, "The Next Generation of International Law: Space, Ice, and the Cosmolegal Proposal (2021) 21 *German Law Journal* 2 (forthcoming March 2021).

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[1] Dmitry Yumashev, et al. *Climate policy implications of nonlinear decline of Arctic land permafrost and other cryosphere elements* 10 NAT.COMMUN.1900 (2019).

[2] The local news provided images of the crater: https://www.youtube.com/watch?time_continue=1&v=q3fQok8iQ94&feature=emb_title

first observed in 2014.[3] The inaccessibility of the Arctic region has limited most ground-based observations to places with existing infrastructure, which can delay understanding of phenomena such as the Yamal crater. This is where another domain steps in: the outer space technology has been crucial for the monitoring of climate change.[4]

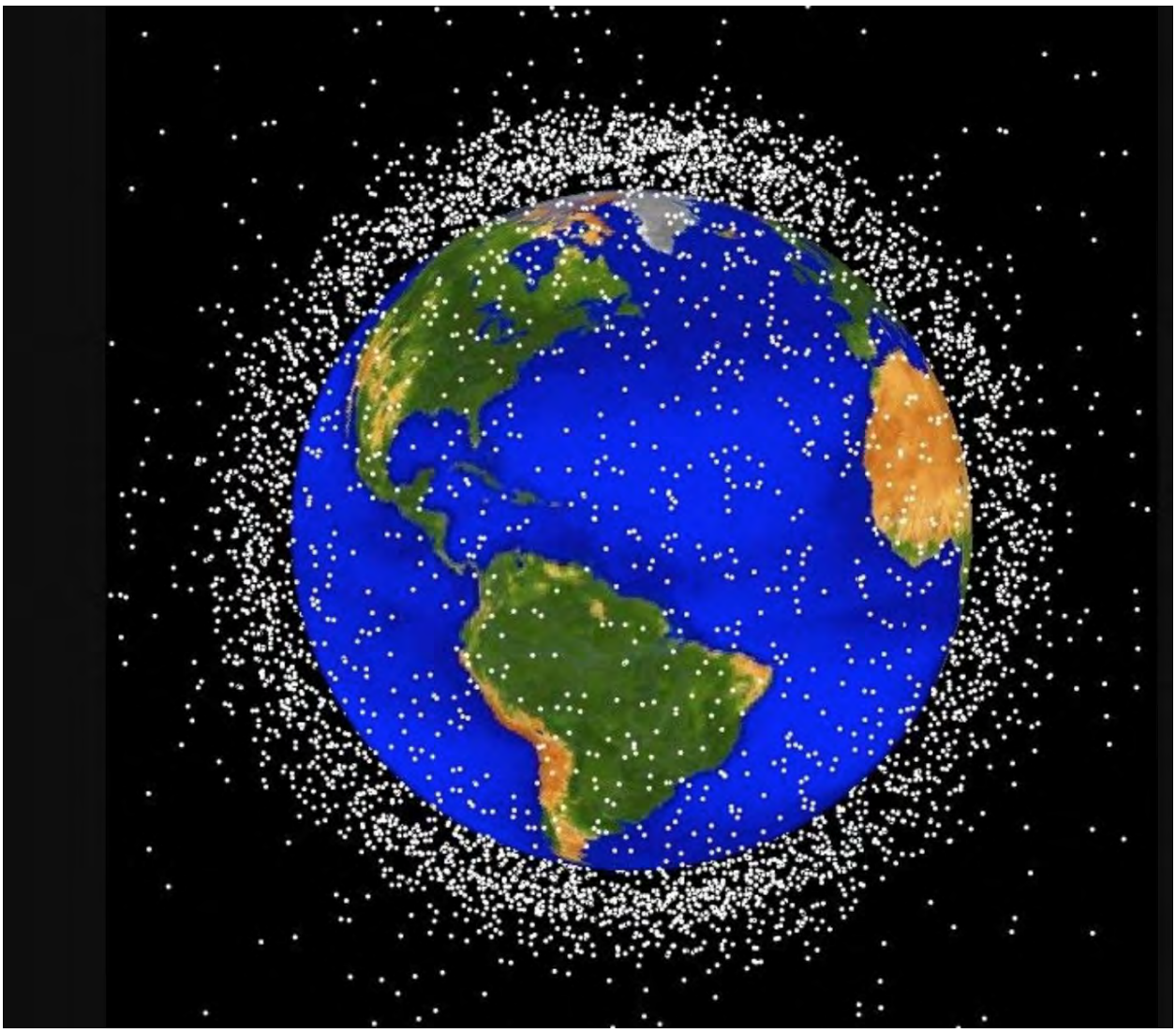
The orbit has also been subject to environmental problems. The increasing orbital debris poses a risk to functional satellites. International law has been unable to respond to this problem despite various other proposals for management of space debris.[5]

These phenomena also demonstrate how non-human phenomena, like GHGs and orbital debris, are unpredictable and disruptive agents. They are unintended results of anthropogenic pollution, and in turn, have the capacity to affect all planetary life (human and non-human). In response, the author has been proposing a new approach to lawmaking through which the law would recognize the unpredictability of human/non- human relations: the cosmolegal. What are the implications of recognizing that everything—including rocks, polluted air, the oceans —is alive?

Cosmolegality emerges from theories on post-human legalities that argue for a move beyond the centrality, for law, of the human subject that acts upon the world (cosmos), as its object. It proposes that 'anything' that makes a difference to other actors is an agent. The main hypothesis of the proposal is that the international legal response to climate change on Earth, and anthropogenic pollution of outer space, requires a new approach to the law itself.

However, the 'resource rush' in the Arctic and outer space (e.g. space mining) reveals the short-sightedness of attempts to instrumentalize and colonize these spaces sidestepping environmental problems. Both domains are governed by international regimes that do not directly respond to the magnitude of the ongoing environmental degradation. The orbital space also has capacity limits, which is not determined only by the number of anthropogenic space objects in a specific orbital neighborhood, but also

[3] Land in Russia's Arctic Blows 'Like a Bottle of Champagne', *The New York Times*, September 5, 2020.
[4] Elder, C. D., Thompson, D. R., Thorpe, A. K., Hanke, P., Walter Anthony, K. M., & Miller, C. E. (2020). Airborne mapping reveals emergent power law of Arctic CH4 emissions. Geophysical Research Letters, 47,
[5] Elena Cirkovic, "The Next Generation of International Law: Space, Ice, and the Cosmolegal Proposal (2021) 21 *German Law Journal* 2 (forthcoming March 2021).



Source, NASA at https://www.orbitaldebris.jsc.nasa.gov/images/beehives/leo640.jpg

the uncertainty in how these objects will behave in the future.[6]

The dominant debates in international law as related to the ongoing and future human activities in outer space have focused recently on the military and commercial uses of outer space with international lawyers participating in the delineation of what the public-private, state-commerce nexus of relations, should become.[7] The recently passed Artemis Accords have intensified these debates arguing that "International space agencies that join NASA in the Artemis program will do so by executing bilateral Artemis Accords agreements, which will describe a shared vision for principles, grounded in the Outer Space Treaty of 1967, to create

[6] For ongoing observations of "space junk" behaviour see for instance Jonathan McDowell (Harvard Smithsonian Centre for Astrophysics), GCAT: General Catalog of Artificial Space Objects, at https://planet4589.org/space/gcat/web/cat/index.html

[7] Olavo O. Bittencourt Neto et.al (eds) Building Blocks for the Development of an International Framework for the Governance of Space Resource Activities: A Commentary (2020)

a safe and transparent environment which facilitates exploration, science, and commercial activities for all of humanity to enjoy."[8] However, the space environment question requires a consideration of its existence beyond potential utility for the human species.

Much of the Earth system and the extraterrestrial space beyond Earth, are operating under the laws of physics, chemistry, or biology, and so on. This includes human bodies. Viruses, gases, or rocks do not in any way, shape, form, bend themselves to public policy. The current legal systems addressing climate change and outer space are not driven by the realities of their environments, but by the formalistic and human-focused structure of international law.

The cosmolegal proposal builds on the hypothesis of profound interrelatedness in the Earth system. Earth System Science (EES) is the application of systems science to Earth sciences and approaches the earth as a self-enclosed system, which includes interacting physical, chemical, and biological processes. The Earth system approach also allows us to understand the earth on a planetary scale. Human-caused environmental problems are not contained only on Earth, and for this reason we need to connect how human activities affect the environment beyond the uppermost layers of atmosphere and in the Earth's orbit, and into the more 'cosmic' realm. Most importantly, it allows for a shift in the imagination and understanding of the cosmos, which would not see the human, and its laws, as a central actor of the Earth System and beyond, or as the apex owner, and manager of its environment. Rather, human is only one of the actors of the 'cosmos', known and unknown.

Arctic Trees, Painting by the Author (Dr. Elena Cirkovic), St. Petersburg, 2018

[8] https://www.nasa.gov/specials/artemis-accords/index.html